CLAIMS:

1. A three-phase transformer comprising a magnetic circuit and three coil blocks, wherein the magnetic circuit comprises:

- two spaced-apart, parallel, plate-like elements; and
- three spaced-apart, parallel column-like elementary circuits, each column carrying the corresponding one of said three coil blocks and serving for the corresponding one of the three phases, wherein the columns are substantially perpendicular to the plate-like elements and are enclosed therebetween such as to form a spatial symmetrical structure about a central axis of the transformer.

2. The transformer according to Claim 1, wherein each of the plates is formed of a strip made of a soft ferromagnetic amorphous alloy.

3. The transformer according to Claim 1, wherein each of the plates is formed of a silicon steel strip.

4. The transformer according to Claim 1, wherein each of the plates has a substantially triangular shape with rounded edges.

5. The transformer according to Claim 1, wherein each of the plates has a substantially circular shape.

6. The transformer according to Claim 1, wherein each of the column-like elementary circuits is in the form of a toroid.

7. The transformer according to Claim 1, wherein each of the column-like elementary circuits is in the form of a stack containing a desired number of axially mounted toroids.

8. The transformer according to any one of Claims 6 or 7, wherein each of the column-like elementary circuits is formed with a radial slot filled with an insulating material.

9. The transformer according to Claim 1, wherein said column-like elementary circuit is in the form of a plurality of vertically aligned strips.

10. The transformer according to any one of Claims 6 or 7, wherein the toroid is formed of strips of different widths which alternate along the axis of the toroid, the strips of adjacent layers being displaced from each other along the axis of the toroid in such a manner that the strips of one layer overlap the butts of the strips of the adjacent layer.

11. The transformer according to Claim 7, wherein the column-like elementary circuits are spaced from each other by insulating spacers.

12. The transformer according to Claim 11, wherein the spacers are formed of plastic with filler of a magnetic powder with the concentration of 20-50%.

13. The transformer according to Claim 1, wherein working surfaces of the plate-like elements are formed with annular concentric recesses, and butt-end surfaces of the column-like elementary circuits are formed with corresponding projections to be received by the recesses.

14. The transformer according to Claim 13, wherein contacting surfaces of the recesses and projections are coated with insulating materials.

15. The transformer according to Claim 1, having a modular structure, an assembling means being provided for assembling the column-like elementary circuits to the plate-like elements of the magnetic circuit, and for mounting primary and secondary windings of the coil block on the corresponding column-like elementary circuit.

16. The transformer according to Claim 1, wherein each of the column-like elementary circuit is produced from a plurality of ribbon pieces attached to each other and aligned in a parallel relationship along the axis of the elementary circuit.

17. The transformer according to Claim 1, wherein gaps between the plate-like elements and the column-like elementary circuits are filled with a magnetic paste.

18. The transformer according to Claim 7, wherein gaps between the toroids of the column-like elementary circuit are filled with a magnetic paste.

19. The transformer according to Claim 18, wherein the magnetic paste is made of an amorphous powder with soft ferromagnetic properties and a binding insulating material.

20. A method for manufacturing a three-phase transformer, the method comprising the steps of:

(i) producing two substantially plate-like elements of a magnetic circuit of the transformer from materials having soft ferromagnetic properties;

(ii) producing three column-like elementary circuits of said magnetic circuit from materials having soft-ferromagnetic properties;

(iii) mounting a coil block on each of the column-like elementary circuits to form the corresponding one of the three phases of the transformer;

(iv) mounting the column-like elementary circuits between the plate-like elements in a spaced-apart parallel relationship of the elementary circuits, such as to form a spatial symmetrical structure about a central axis of the transformer.

21. The method according to Claim 20, wherein each of said substantially plate-like elements is produced by winding strips of the materials having soft magnetic properties about a central hole, thereby forming a planar toroid of a desired shape.

22. The method according to Claim 21, wherein said strips are made of amorphous ribbons.

23. The method according to Claim 21, wherein said strips are made of silicon steel.

24. The method according to Claim 21, wherein the strip is secured to a mandrel having a triangular cross-section and rotatable about its central axis, and, upon obtaining a desired size of the plate-like element by rotating the mandrel, the element is fixed in the obtained state and excess of the strip is cut off.

25. The method according to Claim 24, wherein the fixing is implemented by impregnation.

26. The method according to Claim 24, wherein the fixing is implemented by welding.

27. The method according to Claim 24, wherein said amorphous ribbon strips have different widths, the total width of the strips being equal to the desired height of the plate-like element.

28. The method according to Claim 27, wherein the strips in the adjacent layers of the plate-like element are displaced from each other such that the strips of one layer overlap a gap between the strips of the adjacent layer.

29. The method according to Claim 20, wherein each of the column-like elementary circuit is produced as a toroid of a desired height.

30. The method according to Claim 20, wherein each of the column-like elementary circuit is produced by mounting several toroids on top of each other.

31. The method according to Claim 20, wherein each of the column-like elementary circuits is produced by attaching a plurality of pieces made of the materials having soft-ferromagnetic properties to each other, the pieces being aligned in a parallel relationship along the axis of the column-like elementary circuit..

32. The method according to any one of Claims 29 or 30, wherein the toroid is produced by winding strips of the materials having soft ferromagnetic properties about a central hole.

33. The method according to Claim 32, wherein said strips are made of amorphous ribbons.

34. The method according to Claim 32, wherein said strips are made of silicon steel.

35. The method according to Claim 33, wherein said amorphous ribbon strips have different widths, the total width of the strips being equal to the desired height of the toroid.

36. The method according to Claim 35, wherein the strips in the adjacent layers of the toroid are displaced from each other such that the strips of one layer overlap a gap between the strips of the adjacent layer.